Claims

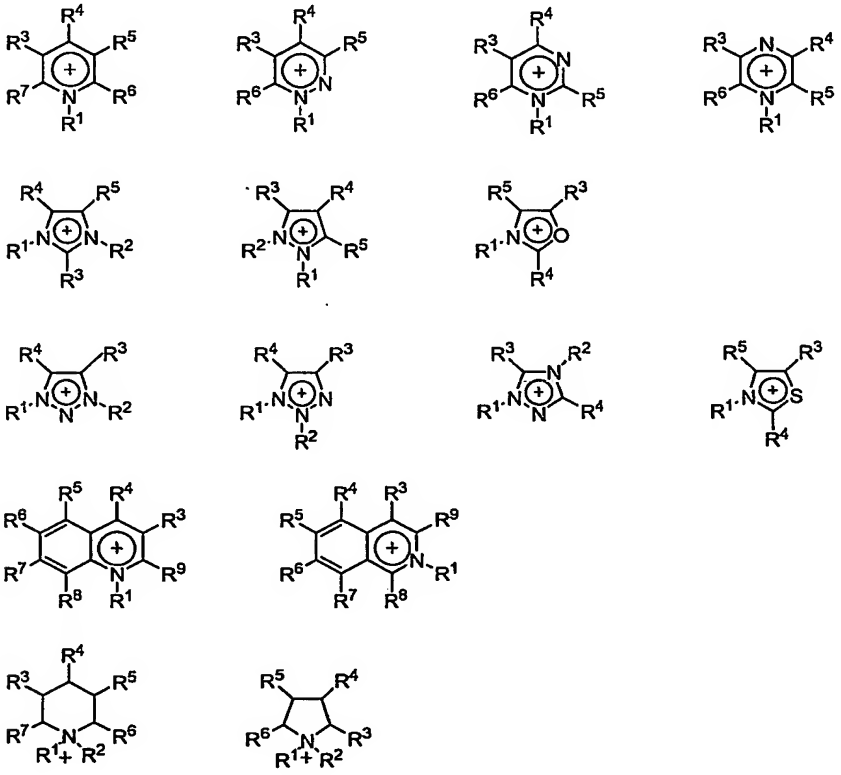
1. A method for preparing a cellulose ether comprising mixing cellulose with an ionic liquid solvent to dissolve the cellulose, and then treating the dissolved cellulose with an etherifying agent in the presence of an inorganic base to form a cellulose ether, and subsequently separating the cellulose ether from the solution, wherein both the dissolution and the etherification are carried out in the absence of an organic base and in the substantial absence of water.

2. The method according to claim 1 wherein microwave irradiation is applied to assist in dissolution and etherification.

3. The method according to claim 1 or 2 wherein pressure is applied to assist in dissolution and etherification.

4. The method according to claim 1 wherein the ionic liquid solvent is molten at a temperature of below 200°C.

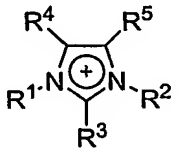
5. The method according to claim 1 wherein the cation of the ionic liquid solvent is selected from the group consisting of



wherein R^1 and R^2 are independently a C_1-C_6 alkyl or C_2-C_6 alkoxyalkyl group, and R^3, R^4, R^5, R^6, R^7, R^8 and R^9 are independently hydrogen, a C_1-C_6 alkyl, C_2-C_6 alkoxyalkyl or C_1-C_6 alkoxy group or halogen, and

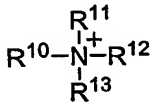
wherein the anion of the ionic liquid solvent is halogen, pseudohalogen, perchlorate or C_1-C_6 carboxylate.

6. The method according to claim 5 wherein said cation comprises



wherein R^3-R^5 are each hydrogen and R^1 and R^2 are the same or different and represent C_1-C_6 alkyl, and said anion is halogen, preferably chloride.

7. The method according to claim 1 wherein the cation of the ionic liquid solvent is



wherein R^{10}, R^{11}, R^{12} and R^{13} are independently a C_1-C_{30} alkyl, C_3-C_8 carbocyclic or C_3-C_8 heterocyclic group and the anion of the ionic liquid solvent is halogen, pseudohalogen, perchlorate, C_1-C_6 carboxylate or hydroxide.

8. The method according to claim 1 wherein the inorganic base is lithium, sodium or potassium hydroxide.

9. The method according to any of the above claims wherein the ether group of the cellulose ether is a C_1-C_6 alkyl, aryl or aryl C_1-C_3 alkyl group optionally substituted by one or more functional groups selected from the group consisting of carboxyl, hydroxyl, amino, alkoxy, halogen, cyano, amide, sulfo, phosphoro, nitro and silyl.

10. The method according to any of claims 1 to 8 wherein the ether group of the cellulose ether is a silyl group substituted by three groups selected from the group consisting of C_1-C_9 alkyl, aryl and aryl C_1-C_3 alkyl.

11. The method according to claim 1 wherein the etherifying agent is a C_1-C_6 alkyl, aryl or aryl C_1-C_3 alkyl halogenide or sulfate optionally substituted by one or

more functional groups selected from the group consisting of carboxyl, hydroxyl, amino, alkoxy, halogen, cyano, amide, sulfo, phosphoro, nitro and silyl.

12. The method according to claim 11 wherein the etherifying agent is sodium chloroacetate.

13. The method according to claim 1 wherein the etherifying agent is an epoxide.

14. The method according to claim 1 wherein the etherifying agent is an acrylic compound.

15. The method according to claim 1 wherein the etherifying agent is a diazoalkane compound.

16. The method according to claim 1 wherein the cellulose ether is separated from the solution by adding a non-solvent for the cellulose ether to precipitate the cellulose ether.

17. The method according to claim 16 wherein said non-solvent is an alcohol, a ketone, acetonitrile, dichloromethane, a polyglycol, an ether or water.

18. The method according to claim 1 wherein the cellolose ether is separated by extraction with a non-solvent for the ionic liquid solvent.